

APPENDIX D

Review of Wild Turkey Food Habits Literature

A33 through A55

Introduction

This appendix summarizes the information regarding wild turkeys food habits that was used throughout this document. Because of the large amount of information regarding wild turkey food habits, only selected abstracts from the literature regarding California and Merriam's turkeys is presented in detail, followed by pertinent summary tables from each study. At the end of this appendix is a list of all plant genera that have been documented in a comprehensive review of turkeys throughout their range. Finally, a special food habits literature cited section, containing all studies that were reviewed, is at the end of this appendix.

Review of Wild Turkey Food Habits in California

Two studies regarding wild turkey food habits in California have been conducted by the Department. The first study was conducted in San Luis Obispo County in 1966 (Smith and Browning 1967). This study was conducted in the oak woodlands of the central Coast Range, representative of the habitats currently occupied by Rio Grande turkeys throughout much of the state. Merriam's turkey habitat is higher elevation and dominated more by conifers than that occupied by Rio Grande turkeys in this study. The second study was conducted recently in San Diego County in higher elevation habitats containing a mix of deciduous and hardwood habitats. Although these habitats do not entirely reflect the conditions at the proposed release sites, they represent well the classes of food items selected by wild turkeys seasonally.

The original abstract and pertinent tables from the San Luis Obispo study follow. Because field work on the San Diego study was recently completed, it is not yet published. Methods and summary tables of fecal analysis are presented.

Smith, W. A., and B. Browning. 1967. Wild turkey food habits in San Luis Obispo County, California. Calif. Fish and Game 53:246-253.

Fifty-nine wild turkeys (*Meleagris gallopavo*) were collected in 1966 to study food habits and to assist in the appraisal of suitable release sites for turkeys transplanted from wild stock. The staple food item was wild oats through the year, supplemented by green grass and forb leafage in the spring and acorns in the fall. The results indicate that much potential habitat is available in the 9 million acres of woodland-grass and woodland-chaparral habitat in California, and that the limiting factor for wild turkeys probably is not food. However, competition for food and deferred grazing should be considered in wild turkey management. Adult male turkeys are significantly larger and females slightly smaller than turkeys from other states, but a larger sample is necessary to substantiate this. Other body measurements fall well within the range of those from birds of other states.

Summary table follows.

TABLE 2
Food Items Eaten by 58 Wild Turkeys, San Luis Obispo County

Item*	Feb. 1966		May 1966		Aug. 1966		Nov. 1966		Totals	
	Vol.%	Freq.	Vol.%	Freq.	Vol.%	Freq.	Vol.%	Freq.	Vol.%	Freq.
	(14)		(16)		(14)		(14)		(58)	
Plant foods										
Wild oats, <i>Avena fatua</i> , <i>A. barbata</i>	6.5	6	55.4	16	69.1	14	21.6	11	38.8	47
Cultivated oats, <i>Avena sativa</i>	44.9	10	8.3	5	2.9	1	3.1	1	14.7	17
Oak acorns, <i>Quercus</i> spp.....	--	--	--	--	--	--	48.1	12	11.6	12
Grass leafage, Gramineae.....	21.7	14	tr	1	tr	4	7.4	11	7.0	30
Cultivated barley, <i>Hordeum vulgare</i>	6.2	6	0.4	4	7.3	4	2.1	4	3.9	18
Italian ryegrass, <i>Lolium multiflorum</i>	--	--	7.6	7	--	--	--	--	2.1	7
Western thistle, <i>Cirsium occidentale</i>	--	--	--	--	--	--	8.0	7	1.9	7
Smooth cat's ear seeds, leaves, flowers, <i>Hypochoeris glabra</i>	--	--	3.0	7	1.1	1	2.4	2	1.7	10
Bluegrass, <i>Poa annua</i>	7.1	1	tr	2	--	--	--	--	1.7	3
Clover leafage, <i>Trifolium</i> sp.....	6.3	12	0.2	1	--	--	--	--	1.6	13
Popcorn flower flowers, seeds, <i>Plagiobothrys nothofulvus</i>	--	--	5.2	8	--	--	--	--	1.4	8
Spear-leaved agoseris flowers, <i>Agoseris retrorsa</i>	--	--	5.0	1	--	--	--	--	1.4	1
California laurel fruit, seeds, <i>Umbellularia californica</i>	--	--	4.1	2	--	--	0.8	3	1.3	5
Poison oak seeds, stems, <i>Rhus diversiloba</i>	0.8	3	--	--	4.2	6	tr	4	1.2	13
Milk thistle, <i>Silybum marianum</i>	--	--	--	--	5.1	12	--	--	1.2	12
Toyon fruit, <i>Photinia arbutifolia</i>	1.8	1	2.5	2	--	--	--	--	1.1	3
Vetch, <i>Vicia</i> sp.....	1.9	5	0.1	1	1.6	6	tr	3	0.9	15
Bristly ox-tongue leaves, flowers, <i>Picris echinoides</i>	--	--	--	--	3.7	2	--	--	0.9	2
Pear fruit, <i>Pyrus</i> sp.....	--	--	--	--	2.6	2	--	--	0.6	2
Buttercup leaves, seeds, <i>Ranunculus</i> sp.....	0.5	4	0.5	12	--	--	tr	1	0.3	17
Quakinggrass, <i>Briza maxima</i>	--	--	--	--	1.1	4	0.3	2	0.3	6
Mariposa lily flowers, <i>Calochortus</i> sp.....	--	--	1.2	2	--	--	--	--	0.3	2
Forb leafage.....	tr	6	tr	3	--	--	1.0	10	0.2	19
Red pimpernel seed capsules, <i>Anagallis arvensis</i>	--	--	0.2	4	0.4	2	--	--	0.2	6
Sedge, <i>Carex</i> sp.....	--	--	0.9	4	--	--	--	--	0.2	4
Prickly lettuce stems, flowers, <i>Lactuca</i> sp.....	--	--	0.2	2	0.6	1	--	--	0.2	3
Unidentified Compositae flowers, seeds.....	--	--	0.3	2	0.1	2	--	--	0.1	4
Prickly sow thistle seeds, flowers, <i>Sonchus asper</i>	--	--	0.2	4	--	--	--	--	0.1	4
Oxalis seeds, flowers, <i>Oxalis</i> sp.....	--	--	0.4	2	--	--	--	--	0.1	2
Strawberry fruit, <i>Fragaria</i> sp.....	--	--	0.3	2	--	--	--	--	0.1	2
White-stem filaree, <i>Erodium moschatum</i>	0.4	1	--	--	--	--	--	--	0.1	1
Insect galls.....	tr	5	--	--	--	--	0.1	6	tr	11
Bur clover, <i>Medicago hispida</i>	tr	1	tr	5	--	--	tr	4	tr	10
Canarygrass, <i>Phalaris minor</i>	tr	5	--	--	--	--	--	--	tr	5
Filaree seeds, leaves, stems, <i>Erodium</i> sp.....	tr	4	--	--	--	--	tr	1	tr	5
Red-stem filaree leaves, <i>Erodium cicutarium</i>	tr	3	--	--	--	--	--	--	tr	3
Pine needles, <i>Pinus</i> sp.....	tr	2	tr	1	--	--	--	--	tr	3
Soft chess, <i>Bromus mollis</i>	--	--	tr	2	--	--	tr	1	tr	3
Windmill pink, <i>Silene gallica</i>	tr	1	0.1	1	--	--	--	--	tr	2
False brome, <i>Brachypodium distachyon</i>	--	--	--	--	tr	2	--	--	tr	2
Beardgrass, <i>Polypogon monspeliensis</i>	--	--	--	--	--	--	tr	2	tr	2
Elegant microseris seeds, flowers, <i>Microseris elegans</i>	--	--	0.1	1	--	--	--	--	tr	1
Wild mustard, Cruciferae.....	tr	1	--	--	--	--	--	--	tr	1
Indian mustard flowers, <i>Brassica juncea</i>	--	--	tr	1	--	--	--	--	tr	1
Violet, <i>Viola</i> sp.....	--	--	tr	1	--	--	--	--	tr	1
Small-flowered melica, <i>Melica imperfecta</i>	--	--	tr	1	--	--	--	--	tr	1
Gooseberry, <i>Ribes</i> sp.....	--	--	--	--	--	--	tr	1	tr	1
Wild barley, <i>Hordeum</i> sp.....	--	--	--	--	--	--	tr	1	tr	1
Tarweed, <i>Madia</i> sp.....	--	--	--	--	--	--	tr	1	tr	1
Common dandelion, <i>Taraxacum officinale</i>	--	--	--	--	--	--	tr	1	tr	1
Juniper stems, <i>Juniperus</i> sp.....	--	--	--	--	--	--	tr	1	tr	1
Ceanothus, <i>Ceanothus</i> sp.....	--	--	--	--	--	--	tr	1	tr	1
Mint family, Labiatae.....	--	--	--	--	--	--	tr	1	tr	1
Animal foods										
Insect fragments, Insecta.....	1.8	6	2.4	12	0.2	3	2.6	4	1.7	25
Jerusalem cricket, <i>Stenopelmatus longispina</i>	--	--	0.3	1	--	--	1.6	5	0.5	6
Isopod, Isopoda.....	--	--	1.0	4	--	--	--	--	0.3	4
Spider fragments, Arachnida.....	--	--	0.1	4	--	--	tr	1	0.1	5
Grasshopper fragments, Locustidae.....	--	--	--	--	--	--	0.6	2	0.1	2
Scarab beetle, Scarabaeidae.....	--	--	--	--	--	--	0.3	1	0.1	1
Crustacean fragments, Crustacea.....	0.1	1	--	--	--	--	--	--	tr	1
Snail, Gastropoda.....	--	--	tr	1	--	--	--	--	tr	1
Tapeworm fragments.....	--	--	tr	1	--	--	--	--	tr	1
Beetle, Coleoptera.....	--	--	--	--	--	--	tr	1	tr	1
Pupa case.....	--	--	--	--	--	--	tr	1	tr	1
Insect larva, Elateridae.....	--	--	--	--	--	--	tr	1	tr	1

* All items are seeds unless designated otherwise.

Wild Turkey Food Habits in San Diego County, California, 1999-2000 (DFG unpublished data).

Methods

This study was conducted primarily in the Descanso Ranger District of the Cleveland National Forest and Cuyamaca Rancho State Park. Thirty-seven turkeys were radio-marked and monitored between 1 February, 1999 and 30 May, 1999, and an additional 55 turkeys between 1 January, 2000 and 15 March, 2000. All radio-marked turkeys were placed in 5 subpopulations, based on geographical location. Stratified sampling was conducted to represent spatial and temporal variation in the 5 sub-populations, across 2 years, and within 4 seasons.

On a weekly basis we randomly selected a sub-sample of 6-8 radio-marked birds for observation, to identify sites selected for feeding. These sites were marked and later sampled to determine species composition and vegetative characteristics at feeding sites. This sampling effort was designed to characterize feeding site selection, which is not presented in detail here. Fresh fecal droppings (#12 hrs.) were collected on appropriate days from selected birds and associated unmarked birds from late morning to midday following observation of the morning foraging period (2-5 hrs.) and at roost sites following observation of the afternoon foraging period, to be most representative of food items selected at the sites that were measured for food availability.

We collected 157 adult wild turkey fecal samples between 1 May, 1999 and 30 November, 1999 and 121 between 1 April, 2000 and 31 October, 2000.

Fecal Analysis

Fecal Analysis was conducted by Cascabel Range Consultants, Arizona. All fecal samples within a given month were combined, resulting in fourteen total composite samples by month and year of the study. We provided CRC with list of all plants that were identified at sites used for feeding, and regional precipitation information presented by month and year to facilitate with plant identification. We also provided CRC with invertebrate specimens of probable turkey foods as reference materials.

CRC performed micro-histological analysis for plant and microscopic analysis for animal matter on adult wild turkey and poult composite samples. Each composite sample was analyzed using 200 views (10 slides; 20 views/slide). Composite samples were not corrected for differential digestibility, rather they were analyzed by frequency of occurrence and percent composition within the sampled population. Plant and animal matter was identified to the finest level of taxonomic identification.

The following tables summarize the results of the plant analyses. Note that percent composition is relative within the plant diet, thereby totaling 100% in each month. In other words, of the plants consumed within a given month, these are the relative amounts of each. Because analysis of plant and animal diets required different methods, the two can not be combined to indicate plant:animal ratio.

Wild Turkey Food Habits (% Composition Plants¹), San Diego County 1999

Plants ²	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Average
<i>Avena barbata</i>	8.36	24.76	33.32	35.89	23.29	17.67	20.48	23.40
<i>Bromus</i> spp.	15.51	10.47	21.94	14.50	12.65	10.17	11.80	13.86
<i>Erigeron</i> spp.	3.79	2.96	5.77	3.14	8.04	9.44	4.23	5.34
<i>Muhlenbergia rigens</i>	2.72	1.66	0.88	3.14	6.66	8.39	8.68	4.59
<i>Quercus</i> spp.	1.46	---	---	---	0.23	6.72	18.68	3.87
<i>Erodium cicutarium</i>	8.70	6.49	5.84	2.14	1.17	0.91	---	3.61
Asteraceae spp.	8.31	5.75	3.49	2.29	1.27	0.80	2.65	3.51
Boraginaceae spp.	9.38	1.87	2.13	1.67	1.50	3.37	3.03	3.28
<i>Cirsium</i> spp.	---	---	0.25	7.08	7.19	5.84	2.50	3.26
<i>Cynodon dactylon</i>	---	---	1.25	3.89	8.25	6.91	1.23	3.07
<i>Elymus</i> spp.	0.73	4.33	4.66	2.57	0.92	1.64	2.52	2.48
<i>Carex</i> spp.	1.94	1.22	1.65	3.40	3.87	2.01	3.16	2.46
<i>Poa</i> spp.	6.08	7.68	1.53	0.39	0.12	---	---	2.26
<i>Rhus trilobata</i>	0.49	---	0.13	1.96	5.71	3.28	4.01	2.23
Unknown Grasses	1.70	2.02	1.68	2.09	2.33	3.53	2.19	2.22
<i>Ambrosia psilostachya</i>	4.67	3.65	1.81	1.44	0.35	---	---	1.70
<i>Trifolium</i> spp.	4.86	4.71	0.75	0.64	0.58	0.23	---	1.68
<i>Astragalus</i> spp.	---	---	---	1.16	2.35	3.94	3.22	1.53
<i>Amsinckia intermedia</i>	3.79	3.14	1.58	1.16	0.69	0.11	---	1.50
Ranunculaceae spp.	2.72	5.07	1.00	0.51	---	---	---	1.33
<i>Euphorbia</i> spp.	3.60	1.66	0.38	0.77	0.81	0.80	---	1.14
<i>Hordeum</i> spp.	---	0.30	0.75	1.03	2.00	1.53	2.28	1.13
<i>Juncus</i> spp.	---	0.30	0.38	1.42	1.75	1.39	1.75	1.00
Unknown Forbs	0.97	1.66	0.63	1.16	1.15	0.46	0.33	0.91
<i>Symphoricarpos</i> spp.	---	---	---	---	0.46	2.64	3.16	0.89
Hydrophyllaceae spp.	2.19	1.51	0.63	0.39	0.46	0.46	0.33	0.85
<i>Pinus</i> spp.	---	---	---	0.13	0.35	2.26	2.43	0.74
Brassicaceae spp.	0.73	0.74	1.25	0.77	0.69	0.68	0.22	0.73
Onagraceae spp.	2.67	0.59	0.38	0.39	0.69	0.11	---	0.69
Rosaceae spp.	1.22	1.22	0.50	0.51	0.92	0.34	0.11	0.69
<i>Koeleria macrantha</i>	---	0.15	2.06	0.64	0.35	0.46	---	0.52
<i>Descurainia</i> spp.	0.49	0.59	0.25	1.03	0.46	0.80	---	0.52
<i>Salidago californica</i>	0.24	---	0.63	0.51	0.46	0.68	0.11	0.38
Fabaceae spp.	---	1.36	0.63	0.26	0.35	---	---	0.37
<i>Rhamnus</i> spp.	---	---	---	---	0.12	1.53	0.77	0.34
Polemoniaceae spp.	0.24	0.89	0.38	0.26	0.46	0.11	---	0.33
<i>Lupine</i> spp.	1.46	0.44	0.38	---	---	---	---	0.33
Portulacaceae spp.	---	1.04	0.38	0.39	0.46	---	---	0.32
<i>Viola</i> spp.	0.97	0.44	0.13	0.13	---	---	---	0.24
<i>Epilobium</i> spp.	---	---	---	0.64	0.35	0.11	---	0.16
Malvaceae spp.	---	---	0.13	0.26	0.46	0.11	---	0.14
<i>Galium</i> spp.	---	0.15	---	0.13	---	0.57	0.11	0.14
<i>Dichelostemma capitatum</i>	---	0.44	0.25	---	---	---	---	0.10
Portulacaceae spp.	---	0.30	0.13	---	0.12	---	---	0.08
<i>Lotus</i> spp.	---	0.44	---	---	---	---	---	0.06
<i>Plantago subnuda</i>	---	---	---	0.13	---	---	---	0.02
<i>Vulpia bromoides</i>	---	---	0.13	---	---	---	---	0.02
<i>Alnus rombifolia</i>	---	---	---	---	---	---	---	0.00
<i>Anemopsis californica</i>	---	---	---	---	---	---	---	0.00
<i>Arbutus</i> spp.	---	---	---	---	---	---	---	0.00
<i>Equisetum</i> spp.	---	---	---	---	---	---	---	0.00
<i>Lessingia</i> spp.	---	---	---	---	---	---	---	0.00
<i>Phacelia inbricata</i>	---	---	---	---	---	---	---	0.00
<i>Salvia apiana</i>	---	---	---	---	---	---	---	0.00
<i>Schismus barbatus</i>	---	---	---	---	---	---	---	0.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

¹ Average based on plants only, animal foods not included.

² Plants available at sampling plots, some may not have been utilized as food items.

Wild Turkey Food Habits (% Composition Plants¹), San Diego County, 2000

Plants ²	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Average
<i>Avena barbata</i>	12.26	14.59	21.50	22.86	29.48	22.54	21.49	20.67
<i>Bromus</i> spp.	13.56	16.12	12.39	17.49	15.42	13.00	6.79	13.54
<i>Erigonum</i> spp.	3.04	2.36	3.47	6.41	5.10	6.67	9.03	5.15
<i>Hordeum</i> spp.	1.32	7.66	4.58	6.69	7.04	3.61	3.77	4.95
Asteraceae spp.	9.51	3.86	5.98	4.25	2.21	2.35	2.49	4.38
<i>Erodium cicutarium</i>	5.40	6.70	3.64	6.94	1.02	1.42	2.08	3.89
<i>Muhlenbergia rigens</i>	0.57	2.64	4.46	2.09	2.91	4.60	8.40	3.67
Boraginaceae spp.	7.55	4.34	2.44	2.26	0.90	0.76	3.07	3.05
<i>Elymus</i> spp.	2.87	3.15	3.13	3.72	2.71	2.46	2.96	3.00
Unknown Grasses	2.13	3.58	2.67	2.40	3.21	3.97	2.58	2.93
<i>Cirsium</i> spp.	----	----	----	1.61	5.51	8.38	4.84	2.91
<i>Ambrosia psilostachya</i>	5.31	3.15	2.73	2.18	2.21	0.65	0.34	2.37
<i>Cynodon dactylon</i>	----	----	----	1.42	5.01	5.57	4.33	2.33
<i>Amsinckia intermedia</i>	3.79	2.67	2.67	2.38	2.01	1.12	----	2.09
<i>Carex</i> spp.	0.57	1.14	0.89	2.56	2.48	3.54	1.59	1.82
<i>Poa</i> spp.	3.85	2.98	4.31	1.24	----	0.11	----	1.78
Unknown Forbs	2.96	2.47	2.27	1.71	0.90	1.08	0.90	1.75
<i>Rhus trilobata</i>	0.14	----	0.11	0.30	2.12	5.20	3.99	1.69
<i>Trifolium</i> spp.	2.44	3.12	4.26	1.10	0.79	----	0.11	1.69
Brassicaceae spp.	4.77	3.23	0.78	1.08	0.45	0.54	0.45	1.61
Euphorbia spp.	3.65	1.93	1.69	0.79	0.56	0.78	0.67	1.44
Descurania spp.	3.36	3.77	0.44	0.39	0.79	0.43	0.56	1.39
Ranunculaceae spp.	1.61	1.84	3.78	1.00	0.79	----	----	1.29
<i>Koeleria macrantha</i>	----	----	1.69	3.88	1.74	0.65	0.11	1.15
<i>Quercus</i> spp.	----	----	----	----	----	0.43	7.55	1.14
<i>Astragalus</i> spp.	----	----	----	----	1.02	3.11	3.45	1.08
Onagraceae spp.	2.35	1.45	0.89	0.30	0.45	1.08	0.22	0.96
Hydrophyllaceae spp.	1.92	1.31	1.00	0.59	----	0.54	0.45	0.83
Rosaceae spp.	1.03	0.85	0.78	0.69	0.11	0.65	0.11	0.60
<i>Juncus</i> spp.	0.14	0.43	0.33	----	0.68	0.99	1.50	0.58
<i>Pinus</i> spp.	----	----	----	----	----	0.65	2.55	0.46
<i>Dichelostemma capitatum</i>	0.72	0.99	0.56	0.20	0.23	0.11	----	0.40
Polemoniaceae spp.	0.29	0.14	1.35	0.30	0.34	0.22	----	0.38
<i>Viola</i> spp.	0.72	1.14	0.56	0.20	----	----	----	0.37
<i>Symphoricarpos</i> spp.	----	----	----	----	----	0.86	1.70	0.37
<i>Salidago californica</i>	0.29	0.57	0.22	0.10	0.45	0.32	0.45	0.34
<i>Lupine</i> spp.	0.86	0.85	0.44	0.20	----	----	----	0.34
Portulaceae spp.	0.29	----	0.78	0.10	0.34	0.32	----	0.26
<i>Rhamnus</i> spp.	----	----	----	----	----	0.32	1.12	0.21
Fabaceae spp.	----	----	0.89	0.20	0.11	0.11	----	0.19
<i>Lotus</i> spp.	0.14	0.43	0.67	----	----	----	----	0.18
<i>Plantago subnuda</i>	0.57	0.43	0.22	----	----	----	----	0.17
Portulaceae spp.	----	----	0.78	0.10	----	0.32	----	0.17
<i>Epilobium</i> spp.	----	----	----	----	0.79	0.22	----	0.14
<i>Galium</i> spp.	----	----	0.44	0.10	----	----	0.34	0.13
Malvaceae spp.	----	----	0.11	0.10	0.11	0.32	----	0.09
<i>Vulpia bromoides</i>	----	0.14	0.11	0.10	----	----	----	0.05
<i>Alnus rombifolia</i>	----	----	----	----	----	----	----	0.00
<i>Anemopsis californica</i>	----	----	----	----	----	----	----	0.00
<i>Arbutus</i> spp.	----	----	----	----	----	----	----	0.00
<i>Equisetum</i> spp.	----	----	----	----	----	----	----	0.00
<i>Lessingia</i> spp.	----	----	----	----	----	----	----	0.00
<i>Phacelia inbricata</i>	----	----	----	----	----	----	----	0.00
<i>Salvia apiana</i>	----	----	----	----	----	----	----	0.00
<i>Schismus barbatus</i>	----	----	----	----	----	----	----	0.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

¹ Average based on plants only, animal foods not included.

² Plants available at sampling plots, some may not have been utilized as food items.

Merriam's Food Habits References and Abstracts

Korschgen, L. J. 1967. Feeding habits and foods, Pages 137-198 in O. H. Hewitt, ed. The Wild Turkey and Its Management. The Wildlife Society, Washington D. C. 589pp.

A review of wild turkey food habits, containing all available information to date.

The Wild Turkey

Table 7.11. Principal Foods of Merriam's Turkey
(Volume percentages, based upon crops (C) and droppings (D) analyses)

Food Item	Location: Samples:	*a Colo. 200C	*b Colo. 85C	*c Ariz. 249D	*d Ariz. 24C	*e Ariz. 23C	*f All 568C, D
Pines, <i>Pinus</i> sp.		---	---	34.3	---	---	14.7
Grass leaves, Gramineae		6.0	5.0	20.5	1.4	0.6	11.7
Oats, <i>Avena sativa</i>		16.0	9.0	0.1	13.1	1.0	7.4
Acorns, <i>Quercus</i> sp.		8.0	3.0	4.2	0.8	45.8	6.8
Muhly grasses, <i>Muhlenbergia</i> sp.		---	1.0	4.7	9.9	25.7	3.6
Barley, <i>Hordeum vulgare</i>		6.0	8.0	0.8	---	---	3.6
Forb leaves, unclassified		---	---	7.8	---	1.2	3.4
Dandelion <i>Taraxacum officinale</i>		7.0	2.0	1.3	---	1.5	3.3
Bluegrasses, <i>Poa</i> sp.		1.0	3.0	5.9	---	---	3.3
Lovegrasses, <i>Eragrostis</i> sp.		---	---	5.3	0.1	---	2.3
Wheat, <i>Triticum aestivum</i>		1.0	20.0	---	---	---	1.8
Needlegrasses, <i>Stipa</i> sp.		2.0	4.0	1.3	---	---	1.8
Dropseed grasses, <i>Sporobolus</i> sp.		3.0	4.0	0.1	---	3.3	1.8
Fescue grasses, <i>Festuca</i> sp.		---	---	3.6	0.8	1.1	1.6
Sunflowers, <i>Helianthus</i> sp.		3.0	1.0	---	9.1	1.2	1.6
Smartweeds, <i>Polygonum</i> sp.		4.0	---	---	---	---	1.4
Ragweeds, <i>Ambrosia</i> sp.		1.0	---	---	22.2	1.0	1.3
Gramas, <i>Bouteloua</i> sp.		1.0	---	1.8	0.1	0.3	1.1
Clovers, <i>Trifolium</i> sp.		2.0	2.0	0.2	---	1.6	1.1
Bearberry, <i>Arctostaphylos uva-ursi</i>		3.0	---	0.1	---	---	1.1
Juniper, <i>Juniperus</i> sp.		---	---	2.5	0.1	---	1.1
Bristle grasses, <i>Setaria</i> sp.		3.0	---	---	---	---	1.0
Goldeneye, <i>Viguiera</i> sp.		---	---	0.8	16.4	---	1.0
Timothy, <i>Phleum pratense</i>		2.0	2.0	---	---	---	1.0
Corn, <i>Zea mays</i>		2.0	---	---	---	---	0.7
Wild oats, <i>Avena fatua</i>		2.0	---	---	---	---	0.7
Bluestem, <i>Andropogon</i> sp.		2.0	---	---	---	---	0.7
Prickly lettuce, <i>Lactuca scariola</i>		1.0	2.0	---	---	---	0.6
Snowberry, <i>Symphoricarpos</i> sp.		1.0	1.0	---	---	---	0.5
Sumacs, <i>Rhus</i> sp.		---	3.0	0.1	0.1	---	0.5
Roses, <i>Rosa</i> sp.		1.0	1.0	---	---	---	0.5
Panic grasses, <i>Panicum</i> sp.		1.0	---	0.1	---	---	0.4
Bee plant, <i>Cleome serrulata</i>		1.0	---	---	---	---	0.3
Alfalfa, <i>Medicago sativa</i>		1.0	---	---	---	---	0.3
Eriogonum, <i>Eriogonum</i> sp.		---	---	---	6.8	1.3	0.3
Asters, <i>Aster</i> sp.		---	2.0	---	---	---	0.3
Everlasting pea, <i>Lathyrus</i> sp.		---	1.0	---	3.1	---	0.3
Goat chicory, <i>Agoseris</i> sp.		---	---	---	6.3	---	0.3
Composites, unclassified		---	---	0.5	---	---	0.2
Wild grapes, <i>Vitis</i> sp.		---	---	0.3	---	1.5	0.2
Meadow foxtail, <i>Alopecurus</i> sp.		---	---	0.4	---	---	0.2
Redtop, <i>Agrostis</i> sp.		---	---	0.4	---	---	0.2
Silktassel, <i>Garrya</i> sp.		---	---	---	4.0	---	0.2
Brome-grasses, <i>Bromus</i> sp.		---	1.0	---	---	---	0.1
Beggar-ticks, <i>Bidens</i> sp.		---	1.0	---	---	---	0.1
Storksbill, <i>Erodium</i> sp.		---	---	---	3.3	---	0.1
Milk-vetch, <i>Astragalus</i> sp.		---	---	---	1.3	---	0.1
Animal foods—mostly insects		16.0	20.0	2.8	---	11.0	10.1
Per cent of total food volume		97.0	96.0	100.0	99.5	99.1	96.7

*a Hoffman (1962)

*b Burget (1957)

*c Reeves and Swank (1955)

*d Murie (1946)

*e Reeves and Swank (1955)

*f Weighted average of combined data

Table 7.12. Principal Foods of Merriam's Turkey
(Occurrence percentages, based upon crops (C) and droppings (D) analyses)

Food Item	Location: Samples:	*a Mont. 2,192D	*b Colo. 200C 1,545D	*c Ariz. 249D	*d N. Mex. 42D	*e Ariz. 24C	*f Ariz. 23D	*g All 4,275
Grass leaves, Gramineae		23.0	76.5	71.5	73.8	29.2	4.3	48.1
Oats, <i>Avena sativa</i>		42.3	19.7	10.0	16.7	20.8	69.6	31.0
Snowberries, <i>Symphoricarpos</i> sp.		40.9	5.8	—	—	—	4.3	23.4
Forb leaves, unclassified		7.7	35.6	52.2	38.1	—	86.9	22.4
Bearberry, <i>Arctostaphylos uva-ursi</i>		37.3	5.7	7.2	19.0	—	—	22.1
Pines, <i>Pinus</i> sp.		1.3	19.4	66.7	35.7	—	—	12.8
Hawthorns, <i>Crataegus</i> sp.		20.9	3.4	—	—	—	—	12.1
Grass heads, Gramineae		19.6	—	—	—	—	—	10.0
Dandelion, <i>Taraxacum officinale</i>		—	20.2	8.0	—	—	60.9	9.1
Sedges, <i>Carex</i> sp.		16.6	—	0.8	—	—	4.3	8.5
Acorns, <i>Quercus</i> sp.		—	14.3	37.8	23.8	16.7	17.4	8.4
Smartweeds, <i>Polygonum</i> sp.		4.9	11.7	3.2	—	—	21.7	7.6
Dropseed grasses, <i>Sporobolus</i> sp.		0.5	13.8	8.4	19.0	—	47.8	6.8
Sumacs, <i>Rhus</i> sp.		10.3	1.3	2.4	—	8.3	—	6.0
Roses, <i>Rosa</i> sp.		7.7	5.8	—	7.1	—	—	5.9
Cherries, <i>Prunus</i> sp.		8.3	0.5	—	—	—	—	4.5
Needlegrasses, <i>Stipa</i> sp.		—	8.7	8.0	—	—	39.1	4.2
Brome grasses, <i>Bromus</i> sp.		6.7	0.7	—	—	—	26.1	4.0
Bluegrasses, <i>Poa</i> sp.		—	7.4	8.8	—	—	4.3	3.6
Panic grasses, <i>Panicum</i> sp.		—	2.6	30.9	—	—	—	2.9
Clovers, <i>Trifolium</i> sp.		—	3.6	22.1	—	—	13.0	2.8
Currant, <i>Ribes</i> sp.		4.2	0.9	—	9.5	—	—	2.6
Cactus, <i>Opuntia</i> sp.		—	6.5	—	—	—	—	2.6
Barley, <i>Hordeum vulgare</i>		—	4.7	0.8	16.7	—	78.3	2.5
Sunflowers, <i>Helianthus</i> sp.		—	5.0	—	4.8	33.3	17.4	2.4
Grama grasses, <i>Bouteloua</i> sp.		—	2.3	16.1	21.4	12.5	34.8	2.4
Ragweeds, <i>Ambrosia</i> sp.		—	4.1	0.4	—	70.8	39.1	2.3
Juniper, <i>Juniperus</i> sp.		0.2	2.1	14.9	4.8	12.5	8.7	2.0
Vetch, <i>Vicia</i> sp.		2.6	1.6	—	—	—	17.4	1.9
Bristle grasses, <i>Setaria</i> sp.		—	4.5	—	—	—	—	1.8
Muhly grasses, <i>Muhlenbergia</i> sp.		—	0.8	14.1	30.9	37.5	—	1.7
Lovegrasses, <i>Eragrostis</i> sp.		—	0.1	21.3	—	4.2	43.5	1.5
Wild grapes, <i>Vitis</i> sp.		—	—	22.9	—	—	34.8	1.5
Wheat, <i>Triticum aestivum</i>		—	2.2	—	2.4	—	86.9	1.4
Wild plum, <i>Prunus americana</i>		2.6	—	—	—	—	—	1.3
Puccoons, <i>Lithospermum</i> sp.		1.2	1.1	—	—	—	—	1.1
Timothy, <i>Phleum pratense</i>		—	2.6	—	—	—	—	1.1
Oregon grape, <i>Mahonia</i> sp.		2.1	—	—	—	—	—	1.1
Alfalfa, <i>Medicago sativa</i>		1.3	0.6	—	—	—	—	0.9
Corn, <i>Zea mays</i>		—	0.6	—	64.3	—	—	0.9
Festuces, <i>Festuca</i> sp.		—	0.8	8.8	—	4.2	—	0.9
Buffaloberry, <i>Shepherdia</i> sp.		1.4	—	—	—	—	—	0.7
Goldeneye, <i>Viguiera</i> sp.		—	—	2.8	—	54.2	17.4	0.6
Blackberries, <i>Rubus</i> sp.		1.0	—	—	—	—	—	0.5
Galingales, <i>Cyperus</i> sp.		—	—	6.4	—	—	13.0	0.4
Animal foods—mostly insects		39.6	40.2	61.0	2.4	—	65.2	37.1

*a Rose (1956)

*b Hoffman (1962)

*c Reeves and Swank (1955)

*d Spicer (1959)

*e Murie (1946)

*f Reeves and Swank (1955)

*g Weighted average of combined data

Laudenslager, Scott L. and Lester D. Flake. 1987. Fall Food Habits of Wild Turkeys in South Central South Dakota. *Prairie Naturalist*. 19 (1): 37-40.

Fall food habits of the wild turkey (*Meleagris gallopavo*) were studied in 1984 and 1985 in Gregory County, South Dakota, by examining crops from hunter-killed birds. Orthoptera, primarily grasshoppers (Acrididae), comprised 50.1% of the total volume in 1984, while acorns from bur oak (*Quercus macrocarpa*) comprised 56.4% of the total volume in 1985. Grasshoppers, acorns, corn and oats comprised over 72% of the total volume in both years. Summary tables follow.

Table 1. Aggregate % (%A) and frequency (%F) of food items in crops of wild turkeys collected in Gregory County, South Dakota, during early fall, 1984 and 1985.

Food items	1984		1985		84 & 85	
	%A	%F	%A	%F	%A	%F
	n = 15		n = 15		n = 30	
Plant Matter						
Acorn (<i>Quercus macrocarpa</i>) (s) ^a	0.0	0.0	56.4	80.0	28.2	40.0
Corn (<i>Zea mays</i>) (s)	3.8	13.3	16.2	20.0	10.0	16.6
Oats (<i>Avena sativa</i>) (s)	18.8	26.7	0.0	0.0	9.4	13.3
Diopsidea (<i>Sporobolus</i> spp.) (s)	0.9	20.0	5.3	66.7	3.1	43.3
Giant ragweed (<i>Ambrosia trifida</i>) (s)	5.9	20.0	0.0	0.0	2.9	10.0
Foxtail (<i>Setaria</i> spp.) (s)	5.2	66.7	0.2	46.7	2.7	56.7
Skunkbrush sumac (<i>Rhus aromatica</i>) (f)	0.0	0.0	4.8	6.7	2.4	3.3
Sumac (<i>Rhus</i> spp.) (f)	0.7	53.3	3.8	46.7	2.2	50.0
Unidentified plant material	2.6	86.7	1.1	100.0	1.9	93.3
Poison ivy (<i>Toxicodendron rydbergii</i>) (f)	2.6	40.0	1.3	20.0	1.9	30.0
Wild rose (<i>Rosa</i> spp.) (f)	2.6	26.7	0.0	0.0	1.3	13.3
Prairie coneflower (<i>Ratibida columnifera</i>) (s)	1.6	13.3	0.8	6.7	1.2	10.0
Bluegrass (<i>Poa</i> spp.) (l)	tr. ^b	20.0	2.0	80.0	1.0	50.0
Sand dropseed (<i>Sporobolus cryptandrus</i>) (s)	0.9	60.0	0.7	20.0	0.8	40.0
Prickly pear (<i>Opuntia</i> spp.) (s)	1.2	20.0	0.0	0.0	0.6	10.0
Russian olive (<i>Elaeagnus angustifolia</i>) (f)	0.0	0.0	1.2	6.7	0.6	3.3
Common ragweed (<i>Ambrosia</i> spp.) (s)	0.5	33.3	0.3	13.3	0.4	23.3
Grape (<i>Vitis</i> spp.) (f)	0.5	13.3	0.0	0.0	0.3	6.7
Hackberry (<i>Celtis occidentalis</i>) (f)	0.4	13.3	0.0	0.0	0.2	6.7
Dandelion (<i>Taraxacum</i> spp.) (l)	0.0	0.0	0.3	13.3	0.2	6.7
Sedge (<i>Carex</i> spp.) (s)	tr.	33.3	0.2	13.3	0.1	23.3
Pescue (<i>Festuca</i> spp.) (s)	0.2	40.0	0.0	0.0	0.1	20.0
Japanese brome (<i>Bromus japonicus</i>) (s)	0.2	26.6	tr.	6.7	0.1	16.6
Hoary vervane (<i>Verbena stricta</i>) (s)	tr.	26.6	tr.	20.0	tr.	23.3
Salsify (<i>Thiophogon</i> spp.) (l)	tr.	26.6	0.0	0.0	tr.	13.3
Club moss (<i>Lycopodium</i> spp.) (l)	tr.	26.6	0.0	0.0	tr.	13.3
Hog peanut (<i>Amphicarpa bracteata</i>) (s)	tr.	6.7	tr.	13.3	tr.	10.0
Animal Matter						
Orthopteran insects	50.1	86.7	2.6	66.7	26.3	76.7
Araneae (spiders)	tr.	33.3	tr.	26.6	tr.	30.0
Lepidopteran insects	tr.	33.3	tr.	13.3	tr.	23.3
Coleopteran insects	tr.	26.6	tr.	13.3	tr.	20.0
Unidentified insect parts	tr.	26.6	tr.	6.7	tr.	16.7
Hemipteran insects	tr.	33.3	0.0	0.0	tr.	16.7
Hymenopteran insects	tr.	13.3	tr.	13.3	tr.	13.3
Other						
The following items occurred in less than three crops: sunflower (<i>Helianthus</i> spp.) (s), ground cherry (<i>Physalis</i> spp.) (f), false gromwell (<i>Onosmodium molle</i>) (s), barnyard grass (<i>Echinochloa</i> spp.) (s), hornbeam (<i>Carpinus</i> spp.) (s), ground plum (<i>Astragalus</i> spp.) (f), hawthorn (<i>Crataegus</i> spp.) (f), beggar-ticks (<i>Bidens</i> spp.) (s), clover (<i>Trifolium</i> spp.) (l), marijuana (<i>Cannabis sativa</i>) (s), wild lettuce (<i>Lactuca canadensis</i>) (l), breadroot scurfpea (<i>Pisonia esculenta</i>) (s), downy brome (<i>Bromus tectorum</i>) (s), juniper (<i>Juniperus</i> spp.) (s), pigweed (<i>Amaranthus</i> spp.) (s), panic grass (<i>Panicum</i> spp.) (s), needle grass (<i>Stipa</i> spp.) (s), Russian thistle (<i>Salsola iberica</i>) (s), mallow (<i>Malva</i> spp.) (s), box elder (<i>Acer negundo</i>) (l), black medic (<i>Medicago lupulina</i>) (s), sidecoats grama (<i>Bouteloua curtipendula</i>) (s), dock (<i>Rumex</i> spp.) (s), lovegrass (<i>Bragrostis</i> spp.) (s), sandbar (<i>Cenchrus longispinus</i>) (s), hopbush (<i>Ostrya virginiana</i>) (s), Diploda (millipedes), Neuropteran insects, Dipteran insects, Heteropterans insects.						

^aseeds (s), fruit (f), leaves (l)

^btr. — trace (less than 0.1%)

Mackey, D. L., and R. J. Jonas. 1982. Seasonal habitat use and food habits of Merriam's turkeys in south-central Washington. Proc. Western Wild Turkey Workshop 1: 99-110.

Seasonal habitat and utilization and food habitats of a Merriam's turkey (Meleagris gallopavo merriami) population in southern Klickitat County, southcentral Washington, were studied from February 1980 to October 1981. Habitat types were identified as pine-oak, oak, fir, and non-forest. Pine-oak habitat alone or combined with fir habitat was the most preferred habitat during all seasons. Non-forest areas greater than 2.5 ha in size were likely of little importance to turkeys. Major food items during fall were grass seeds, grasshoppers, ponderosa pine (Pinus ponderosa) seeds, and forb fruits. Vegetative parts and seed of grasses and forbs, and Garry oak (Quercus garryana) acorns were important foods during spring.

Table J. Food habits analysis of wild turkey crops collected during 2 fall and spring hunting seasons, Klickitat County, Washington, 1980-1981

Item	Fall			Spring		
	Frequency of Occurrence (%)	Aggregate Volume (%)	Aggregate Percent	Frequency of Occurrence (%)	Aggregate Volume (%)	Aggregate Percent
FORBS						
Forb (v) ^a	24.0	0.3	0.1	71.0	32.1	16.0
Forb (F) ^b	48.0	10.0	2.3	93.0	4.5	32.6
<u>Galium aparine</u> (F)	24.0	0.6	0.5			
SHRUBS						
<u>Symphoricarpos albus</u> (v)	14.0	0.1	Tr ^c			
<u>Symphoricarpos albus</u> (F)	29.0	2.4	1.5			
GRASSES						
Grass (v)	38.0	0.1	Tr	50.0	0.1	7.1
Grass (F)	95.0	4.8	37.5	36.0	40.4	10.1
Wheat (F)	5.0	17.4	3.1			
TREES						
<u>Pinus ponderosa</u> (F)	52.0	14.6	18.1	7.0	0.1	0.1
<u>Pseudotsuga menziesii</u> (F)	19.0	0.2	1.0			
<u>Quercus garryana</u> (F)	19.0	3.1	2.8	36.0	8.4	12.9
INSECTS						
Araneida	19.0	0.3	0.2	7.0	Tr	Tr
Coleoptera (Beetles)	5.0	0.5	0.5	36.0	0.5	5.0
Diptera	4.0	Tr	Tr	7.0	Tr	Tr
Hemiptera	5.0	Tr	Tr			
Hymenoptera	5.0	Tr	Tr			
Isopoda	9.0	1.0	1.4			
Lepidoptera	5.0	Tr	Tr			
Orthoptera (Grasshoppers)	38.0	43.3	21.9			
Insect Larvae	5.0	Tr	Tr			
Unidentified insect	19.0	0.3	0.1	21.0	Tr	Tr
MISCELLANEOUS						
Grit	38.0	0.5	0.4	57.0	4.2	2.1
Detritus	24.0	0.2	6.0	36.0	8.9	2.1
Unidentified vegetation	62.0	0.4	2.2	71.0	0.7	4.8
Unidentified seeds				21.0	0.1	7.1

^a(v) = vegetative parts--leaves, stems, etc.

^b(F) = fruits, flowers, seeds, etc.

^cTr = <0.1%

Rumble, M. A., and S. H. Anderson. 1996. Feeding ecology of Merriam's turkeys (*Meleagris gallopavo merriami*) in the Black Hills, South Dakota. Am. Midl. Nat. 136:157-171.

We studied the feeding ecology of Merriam's turkey (*Meleagris gallopavo merriami*) in the Black Hills, South Dakota, between 1986 and 1989.. Adult birds consumed 78 kinds of food of which four food categories constituted >75% of summer diets. Ponderosa pine (*Pinus ponderosa*) seeds were the preferred winter food and birds selected habitats where pine seed abundance was highest. During drought, ponderosa pine produced fewer seeds and winter turkey diets were predominantly kinnikinnick (*Arctostaphylos uva-ursi*) fruits and herbaceous foliage and seeds. Merriam's turkeys consumed more green foliage from late winter through spring. Summer diet were mostly grass seeds and foliage. Arthropods comprised >60% of the poult diets. Poults #3 wk old consumed more arthropods than poults >7 wk old. Grasshoppers (*Orthoptera*) and beetles (*Coleoptera*) were the primary arthropods eaten by poults. Brood hens selected macrohabitats where arthropod abundance was highest. Poults selected arthropods with large mass/individual and disregarded some arthropods that were abundant but with low mass/individual.

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TABLE 3.—Percent composition of Merriam's turkey poult diets by age classes 1986–1988

Food types	0–3 wk $\bar{x} \pm SE$	4–7 wk $\bar{x} \pm SE$	8–12 wk $\bar{x} \pm SE$
Coleoptera	29.4 \pm 5.4A ¹	24.4 \pm 6.1A	7.0 \pm 2.5B
Orthoptera	38.8 \pm 5.6	48.8 \pm 7.2	43.0 \pm 8.0
Hemiptera	2.0 \pm 1.0	0.1 \pm 0.1	0.0 \pm 0.0
Hymenoptera	9.2 \pm 2.4A	1.5 \pm 1.0B	6.0 \pm 3.3AB
Other arthropods ²	2.0 \pm 0.8	1.7 \pm 1.5	5.1 \pm 3.3
Total arthropods	81.4 \pm 4.7A	76.5 \pm 3.9AB	61.1 \pm 9.4B
<i>Bromus</i> spp. foliage	0.9 \pm 0.5	0.5 \pm 0.3	2.4 \pm 1.1
<i>Carex</i> spp. foliage	3.1 \pm 0.7	3.0 \pm 0.6	1.5 \pm 0.5
Kentucky bluegrass foliage	2.3 \pm 0.4A	2.0 \pm 0.3A	0.7 \pm 0.2B
Other grass foliage ²	1.9 \pm 0.8AB	2.4 \pm 0.9A	0.5 \pm 0.1B
Total grass foliage	8.2 \pm 1.7	7.9 \pm 1.1	5.1 \pm 1.2
Grass seeds ²	5.2 \pm 2.7A	5.7 \pm 1.5AB	13.4 \pm 4.1B
Forb foliage ²	1.8 \pm 0.6	1.1 \pm 0.2	0.9 \pm 0.4
Forb seeds/flowers ²	1.4 \pm 0.7A	2.0 \pm 0.9AB	4.8 \pm 1.6B
Soft mast ²	1.0 \pm 0.5	5.8 \pm 2.2	4.0 \pm 1.7
Hard mast ²	0.7 \pm 0.4	0.9 \pm 0.8	10.6 \pm 6.0

¹ Within-row averages followed by different letters are significantly different $\alpha = 0.10$, MRPP test

² These food categories include identified and unidentified items

Scott, V.E., and E.L. Boeker. 1973. Seasonal food habits of Merriam's turkeys on the Fort Apache Indian Reservation. Pages 1551-1557 in G.C. Sanderson and H.C. Schultz eds., Wild Turkey Management: Current Problems and Programs. Columbia: The Missouri Chapter of the Wildlife Society and University Press. 355 pp.

The seasonal feeding habits of Merriam's wild turkey (*Meleagris gallopavo merriami*) were studied on the Fort Apache Indian Reservation over a period of 3 years. Comparative data were obtained from the Moqui District of the Kaibab National Forest. The study included analyses of crops and droppings. Turkeys were found to be opportunists in their feeding habits. Grasses and forbs were important food items yearlong, especially in years of mast crop failures. Fruit- and mast-producing species such as manzanita (*Arctostaphylos pungens*), skunkbush (*Rhus trilobata*), ponderosa pine (*Pinus ponderosa*), and oak (*Quercus spp.*). Added substantially to the seasonal diet, and juniper berries (*Juniperus spp.*). Were utilized in the absence of other mast crops. Animal material (mostly insects) was consumed throughout the year but was more important during the summer months.

Summary tables follow.

Wild Turkey Management

Table 43. ' Percentage of volume and occurrence of food items identified in 29 Merriam's turkey crops from 1964 to 1969 on the Fort Apache Indian Reservation, Arizona. (Numbers of samples are given in parentheses.)

Food Item	Spring (3)		Summer (7)		Fall (16)		Winter (3)	
	Vol.	Occ.	Vol.	Occ.	Vol.	Occ.	Vol.	Occ.
Juniper berries (<i>Juniperus</i> spp.)	27.7	100	—	—	<0.1	19	36.3	66
Dandelion (<i>Taraxacum officinale</i>)	6.3	66	17.6	57	9.7	94	27.9	100
Manzanita (<i>Arctostaphylos pungens</i>)	—	—	37.8	86	12.4	44	—	—
Pine seed (<i>Pinus ponderosa</i>)	0.3	33	—	—	24.0	50	6.7	66
Mt. dandelion (<i>Agoseris</i> spp.)	38.7	100	—	—	—	—	—	—
Acorns (<i>Quercus</i> spp.)	<0.1	33	0.3	29	23.4	94	<0.1	66
Animal material (insects)	0.3	100	9.2	100	2.4	88	1.2	100
Unidentified forbs	6.3	66	3.3	86	0.4	44	3.1	100
Unidentified grasses	1.7	66	4.6	71	3.1	50	3.4	33
Lovegrass (<i>Eragrostis</i> spp.)	<0.1	33	—	—	10.0	50	—	—
Bluegrass (<i>Poa</i> spp.)	2.3	33	—	—	—	—	7.0	33
Rock jasmine (<i>Androsace</i> spp.)	8.0	66	0.7	43	—	—	—	—
Junegrass (<i>Koeleria cristata</i>)	—	—	5.3	14	—	—	—	—
Skunkbush (<i>Rhus trilobata</i>)	—	—	5.3	57	—	—	—	—
Unidentified mass	1.1	66	1.1	100	1.1	44	1.8	100
Black medic (<i>Medicago lupulina</i>)	3.7	66	0.3	14	0.3	38	<0.1	33
Buttercup (<i>Ranunculus</i> spp.)	—	—	4.3	14	—	—	—	—
Fleabane (<i>Erigeron</i> spp.)	—	—	3.5	29	<0.1	19	—	—
Needlegrass (<i>Stipa</i> spp.)	—	—	3.3	14	—	—	—	—
Bromegrass (<i>Bromus</i> spp.)	—	—	—	—	—	—	3.2	66
Ticklegrass (<i>Muhlenbergia sinuosa</i>)	—	—	—	—	2.7	44	—	—
Mariposa (<i>Calochortus</i> spp.)	0.3	33	1.3	29	<0.1	6	—	—
Goldeneye (<i>Viguiera annua</i>)	—	—	—	—	1.6	19	—	—
Filaree (<i>Erodium cicutarium</i>)	<0.1	66	<0.1	43	1.4	44	<0.1	66
Purslane (<i>Portulaca oleracea</i>)	—	—	0.1	14	1.1	13	—	—
Blue grama (<i>Bouteloua gracilis</i>)	—	—	—	—	1.4	31	—	—
Stinkgrass (<i>Eragrostis cilianensis</i>)	—	—	—	—	1.2	19	—	—
Hymenoxys (<i>Hymenoxys</i> spp.)	—	—	1.0	14	—	—	—	—
Wood betony (<i>Pedicularis centranthera</i>)	—	—	0.4	14	—	—	—	—
Milk vetch (<i>Astragalus</i> spp.)	—	—	0.1	14	0.4	14	—	—
Wild buckwheat (<i>Eriogonum</i> spp.)	—	—	0.1	14	0.4	38	—	—
Panicum (<i>Panicum</i> spp.)	—	—	—	—	0.4	6	—	—
Green algae (<i>Chlorophyceae</i>)	—	—	—	—	0.4	6	—	—
Scurf pea (<i>Psoralea tenuiflora</i>)	—	—	—	—	0.3	13	—	—
Euphorbia (<i>Euphorbia</i> spp.)	—	—	—	—	0.3	13	—	—
Side-oats grama (<i>B. curtipendula</i>)	—	—	—	—	0.3	6	—	—
Wormwood (<i>Artemisia</i> spp.)	—	—	—	—	0.3	6	—	—
Hog potato (<i>Hoffmanseggia</i> spp.)	—	—	—	—	—	—	0.3	66
Wooly yarrow (<i>Archillea lanulosa</i>)	<0.1	66	—	—	—	—	—	—
Piñon (<i>Pinus edulis</i>)	<0.1	33	—	—	—	—	<0.1	33
Tansy mustard (<i>Descurainia</i> spp.)	—	—	0.1	14	—	—	—	—
Rocky Mt. iris (<i>Iris missouriensis</i>)	—	—	<0.1	14	—	—	—	—
Gaura (<i>Gaura</i> spp.)	—	—	—	—	0.1	19	—	—
Bluestem (<i>Andropogon</i> spp.)	—	—	—	—	0.1	6	—	—
Lupine (<i>Lupinus</i> spp.)	—	—	—	—	<0.1	13	—	—
Menodora (<i>Menodora</i> spp.)	—	—	—	—	<0.1	6	—	—
Prickly pear (<i>Opuntia</i> spp.)	—	—	—	—	<0.1	6	—	—
Hymenothrix (<i>Hymenothrix</i> spp.)	—	—	—	—	<0.1	6	—	—
Amaranth (<i>Amaranthus</i> spp.)	—	—	—	—	<0.1	6	—	—
Sand dropseed (<i>Sporobolus cryptandrus</i>)	—	—	—	—	<0.1	6	—	—
Crownbeard (<i>Verbesina</i> spp.)	—	—	—	—	<0.1	6	—	—
Common sunflower (<i>Helianthus annuus</i>)	—	—	—	—	<0.1	6	—	—
Unidentified seeds	—	—	—	—	<0.1	6	—	—
Fungi	—	—	—	—	—	—	8.3	33
Stones and gravel	3.3	100	0.3	71	0.8	81	0.8	100
Total forbs	63.3		32.8		16.3		31.3	
Total grasses	4.0		13.2		19.2		13.6	

Food Habits, Disease, and Predation

Table 44. Percentage of volume and occurrence of food items identified in 20 Merriam's turkey crops in 1967 and 1968 from the Moqui District of the Kaibab National Forest, Arizona. (Sample sizes given in parentheses.)

Food Item	October 1967 (11)		October 1968 (9)	
	Vol.	Occ.	Vol.	Occ.
Acorns (<i>Quercus</i> spp.)	5.4	36	29.0	67
Piñon (<i>Pinus edulis</i>)	18.2	46	—	—
Animal material	7.6	100	10.3	89
Leaves of grasses (Gramineae)	7.8	100	8.0	89
Lovegrass (<i>Eragrostis</i> spp.)	14.8	55	<0.1	11
Mt. muhly (<i>Muhlenbergia montana</i>)	6.5	27	6.7	33
Dandelion (<i>Taraxacum officinale</i>)	4.4	55	5.9	67
Tansy mustard (<i>Descurainia</i> spp.)	0.3	9	8.4	44
Goosefoot (<i>Chenopodium</i> spp.)	2.0	64	5.9	67
Blue grama (<i>Bouteloua gracilis</i>)	5.1	82	2.1	22
Spike muhly (<i>Muhlenbergia wrightii</i>)	1.0	55	4.9	33
Loco (<i>Astragalus</i> spp.)	—	—	5.6	56
Salsify (<i>Tragopogon</i> spp.)	2.8	73	2.2	78
False buffalo grass (<i>Munroa squarrosa</i>)	3.2	36	1.0	33
Unidentified forb leaves	3.7	73	—	—
Pine dropseed (<i>Blepharoneuron tricholepis</i>)	3.6	27	—	—
Prostrate loco (<i>Astragalus humistratus</i>)	3.3	64	—	—
Stickseed (<i>Lappula redowskii</i>)	0.7	36	2.2	22
Lettuce (<i>Lactuca</i> spp.)	1.9	27	—	—
Thistle (<i>Cirsium</i> spp.)	1.3	27	2.1	67
Unidentified seeds	<0.1	18	1.9	22
Vetch (<i>Vicia</i> spp.)	1.4	27	0.1	33
Bromegrass (<i>Bromus</i> spp.)	1.6	27	<0.1	11
Ticklegrass (<i>Muhlenbergia sinuosa</i>)	0.7	18	0.2	11
Filaree (<i>Erodium cicutarium</i>)	0.3	18	0.6	44
Silene (<i>Silene</i> spp.)	0.6	18	<0.1	11
Rocky Mt. iris (<i>Iris missouriensis</i>)	—	—	0.6	33
Goldeneye (<i>Viguiera annua</i>)	0.1	18	0.4	11
Scarlet gaura (<i>Gaura coccinea</i>)	0.3	18	—	—
Plantain (<i>Plantago</i> spp.)	0.2	9	—	—
Unidentified mass	<0.1	9	0.3	44
Indian ricegrass (<i>Oryzopsis hymenoides</i>)	<0.1	9	—	—
Needlegrass (<i>Stipa</i> spp.)	<0.1	9	—	—
Prickly pear (<i>Opuntia</i> spp.)	<0.1	9	—	—
Grape (<i>Vitis</i> spp.)	<0.1	9	—	—
Pine seed (<i>Pinus ponderosa</i>)	<0.1	9	<0.1	11
Rose (<i>Rosa</i> spp.)	<0.1	9	—	—
Juniper (<i>Juniperus</i> spp.)	—	—	<0.1	11
Stones and gravel	1.2	100	1.6	100
Total forbs	21.9		23.9	
Total grasses	44.3		34.9	

Wakeling, B. F., and T. D. Rogers. 1996. Winter diet and habitat selection by Merriam's turkeys in north-central Arizona. *Proc. Natl. Wild Turk. Fed.* 7:175-184.

We studied habitat selection by Merriam's wild turkey (*Meleagris gallopavo merriami*) during the winters of 1990-91 through 1993-94 on the Chevelon study area in north-central Arizona. We investigated winter habitat relationships because land management practices, such as timber harvesting and fuelwood cutting, are increasing on winter ranges, and Merriam's turkey winter requirements are poorly understood. We found that turkeys rarely loafed during winter. Turkeys used roost sites that had overhead canopy and larger-diameter ponderosa pine (*Pinus ponderosa*) trees and steeper slopes than random plots. Feeding sites were selected with overhead canopy, greater Gambel oak (*Quercus gambelii*) basal area, fewer pinyon pine (*P. Edulis*) seedlings, and less tall rock and shrub cover. Turkeys selected feeding sites with greater proportions of mast than random plots during late winter; composition of food items at feeding sites was similar to that at random plots during early winter. Turkeys selected acorns and alligator juniper (*Juniperus deppeana*) berries in their diets more than other mast items during all periods. Forbs and insects were selected and grass was avoided throughout winter. Protecting clumps (2/2.5 km²) of mature, high basal area ponderosa pine will provide winter roosting habitat. Known traditional roosts should be protected. Maintaining dense, mature Gambel oak and alligator juniper stands will provide favorable winter feeding habitat. Roosts should be provided 1.6 km from suitable feeding habitat.

Summary table follows.

Table 3. Composition, probabilities of differences, and selection between female diets and measured availability during early winter (15 Nov–1 Feb) in north-central Arizona, 1990–94.

Diet item	Kruskal-Wallis <i>P</i>	Dietary composition (%)	Selection ^a index	Feeding site composition (%)	Selection ^b index	Random plot composition (%)
Pinyon pine seeds	0.334	1.70A ^c		0.00A		0.00A
Ponderosa pine seeds	0.028	1.27A	−0.538	4.11B		2.27AB
Ponderosa pine catkins	0.002	0.00A	−0.999	13.75B		5.50B
Acorns	<0.001	6.04A	0.999	0.00B		0.00B
Juniper berries	<0.001	58.55A	0.989	0.79B		0.00B
Grass	<0.001	8.19A	−0.788	42.98B	−0.454	66.72C
Forbs	<0.001	12.10A	0.984	0.04B		1.23B
Insects	0.456	0.40A		0.06A		0.03A

^aJacobs' *D* selection index (Jacobs 1974) between dietary items and feeding sites.

^bJacobs' *D* selection index (Jacobs 1974) between feeding sites and random plots.

^cDiets with the same letter did not differ ($P > 0.05$) based on a median separation procedure (Miller 1966:166).

Table 4. Composition, probabilities of differences, and selection between female diets and measured availability during late winter (1 Feb–15 Apr) in north-central Arizona, 1990–94.

Diet item	Kruskal-Wallis <i>P</i>	Dietary composition (%)	Selection ^a index	Feeding site composition (%)	Selection ^b index	Random plot composition (%)
Pinyon pine seeds	0.470	0.00A ^c		0.00A		0.00A
Ponderosa pine seeds	<0.001	0.30A	−0.903	5.56B	0.540	1.73C
Ponderosa pine catkins	<0.001	0.00A	−0.999	30.27B	0.631	8.93C
Acorns	<0.001	6.95A	0.385	3.21B	0.999	0.00C
Juniper berries	<0.001	18.42A	0.989	0.13B	0.999	0.00C
Grass	<0.001	35.52A		39.16A	−0.500	65.86B
Forbs	<0.001	10.92A	0.999	0.00B	−0.999	1.10C
Insects	<0.001	2.46A	0.953	0.06B	0.500	0.02C

^aJacobs' *D* selection index (Jacobs 1974) between dietary items and feeding sites.

^bJacobs' *D* selection index (Jacobs 1974) between feeding sites and random plots.

^cDiets with the same letter are not different based on a median separation procedure (Miller 1966:166).

Table 5. Composition, probabilities of differences, and selection between male diets and measured availability during early winter (15 Nov–1 Feb) in north-central Arizona, 1990–94.

Diet item	Kruskal-Wallis <i>P</i>	Dietary composition (%)	Selection ^a index	Feeding site composition (%)	Selection ^b index	Random plot composition (%)
Pinyon pine seeds	0.119	41.95A ^c		0.00A		0.00A
Ponderosa pine seeds	0.077	2.10A	−0.333	4.11B		2.27AB
Ponderosa pine catkins	0.010	1.43A	−0.833	13.75B		5.50B
Acorns	0.074	1.43A		0.00AB		0.00B
Juniper berries	0.062	27.40A	0.959	0.79B		0.00B
Grass	<0.001	5.80A	−0.849	42.98B	−0.454	66.72C
Forbs	0.372	0.81A		0.04A		1.22A
Insects	<0.001	0.00A	−0.999	0.06B		0.03B

^aJacobs' *D* selection index (Jacobs 1974) between dietary items and feeding sites.

^bJacobs' *D* selection index (Jacobs 1974) between feeding sites and random plots.

^cDiets with the same letter are not different based on a median separation procedure (Miller 1966:166).

Table 6. Composition, probabilities of differences, and selection between male diets and measured availability during late winter (1 Feb–15 Apr) in north-central Arizona, 1990–94.

Diet item	Kruskal-Wallis <i>P</i>	Dietary composition (%)	Selection ^a index	Feeding site composition (%)	Selection ^b index	Random plot composition (%)
Pinyon pine seeds	0.014	3.25A ^c	0.999	0.00B		0.00B
Ponderosa pine seeds	0.039	4.63A	−0.229	7.18B		2.95B
Ponderosa pine catkins	<0.001	0.00A	−0.999	33.21B	0.542	12.86C
Acorns	<0.001	8.21A	0.689	1.62B	0.999	0.00C
Juniper berries	<0.001	33.87A	0.992	0.20B		0.00B
Grass	<0.001	24.26A	−0.327	38.69B	−0.499	65.36C
Forbs	<0.001	2.16A	0.999	0.00B	−0.999	1.07A
Insects	<0.001	9.32A	0.985	0.08B	0.778	0.01C

^aJacobs' *D* selection index (Jacobs 1974) between dietary items and feeding sites.

^bJacobs' *D* selection index (Jacobs 1974) between feeding sites and random plots.

^cDiets with the same letter are not different based on a median separation procedure (Miller 1966:166).

Comprehensive Review of Plant Genera Found in Wild Turkey Literature

The comprehensive list of plants found in the wild turkey food habits literature that follows comes from all of the studies listed in the food habits literature cited section. Plants are listed by genus in alphabetical order, but this list does not reflect the relative use and importance of each of these to the wild turkey diet throughout their range.

Plant genera Known in Wild Turkey Food Habits Literature (includes all studies in Food Habits Literature Cited)

<i>Acacia</i> sp.	<i>Cornus</i> sp.	<i>Lonicer</i> sp.	<i>Liquidamber</i> sp.	<i>Xyris</i> sp.
<i>Achillea</i> sp.	<i>Crataegus</i> sp.	<i>Ludwigia</i> sp.	<i>Ranunculus</i> sp.	<i>Zanthoxylum</i> sp.
<i>Actaea</i> sp.	<i>Crotalaria</i> sp.	<i>Lupinus</i> sp.	<i>Ratibida</i> sp.	<i>Zea</i> sp.
<i>Agoseris</i> sp.	<i>Croton</i> sp.	<i>Lycopodium</i> sp.	<i>Rhamnus</i> sp.	<i>Zizanolopsis</i> sp.
<i>Agropyron</i> sp.	<i>Cruciferae</i> sp.	<i>Mahonia</i> sp.	<i>Rhus</i> sp.	
<i>Allium</i> sp.	<i>Cyperus</i> sp.	<i>Medicago</i> sp.	<i>Ribes</i> sp.	
<i>Alopecurus</i> sp.	<i>Dactylis</i> sp.	<i>Melica</i> sp.	<i>Robinia</i> sp.	
<i>Amaranthus</i> sp.	<i>Danthonia</i> sp.	<i>Melilotus</i> sp.	<i>Rosa</i> sp.	
<i>Ambrosia</i> sp.	<i>Daucus</i> sp.	<i>Menispermum</i> sp.	<i>Rubus</i> sp.	
<i>Ampelopsis</i> sp.	<i>Descurainia</i> sp.	<i>Microseris</i> sp.	<i>Rudbeckia</i> sp.	
<i>Amphicarpa</i> sp.	<i>Desmodium</i> sp.	<i>Mitchella</i> sp.	<i>Rumex</i> sp.	
<i>Amphicarpaea</i> sp.	<i>Digitaria</i> sp.	<i>Morus</i> sp.	<i>Sabal</i> sp.	
<i>Anagallis</i> sp.	<i>Diodia</i> sp.	<i>Muhlenbergia</i> sp.	<i>Sagittaria</i> sp.	
<i>Andropogon</i> sp.	<i>Diospyros</i> sp.	<i>Munroa</i> sp.	<i>Sambucus</i> sp.	
<i>Aneilema</i> sp.	<i>Dryopteris</i> sp.	<i>Muscadinia</i> sp.	<i>Sassafras</i> sp.	
<i>Anemone</i> sp.	<i>Echinochloa</i> sp.	<i>Myrica</i> sp.	<i>Scirpus</i> sp.	
<i>Apios</i> sp.	<i>Elaeagnus</i> sp.	<i>Nasturtium</i> sp.	<i>Scleria</i> sp.	
<i>Aralia</i> sp.	<i>Elymus</i> sp.	<i>Nyssa</i> sp.	<i>Scrophularia</i> sp.	
<i>Arbutus</i> sp.	<i>Eragrostis</i> sp.	<i>Onoclea</i> sp.	<i>Senecio</i> sp.	
<i>Archillea</i> sp.	<i>Erigeron</i> sp.	<i>Onosmodium</i> sp.	<i>Serenoa</i> sp.	
<i>Arctium</i> sp.	<i>Eriogonum</i> sp.	<i>Opuntia</i> sp.	<i>Serinea</i> sp.	
<i>Arctostaphylos</i> sp.	<i>Erodium</i> sp.	<i>Orchidaceae</i> sp.	<i>Setaria</i> sp.	
<i>Ardisia</i> sp.	<i>Eupatorium</i> sp.	<i>Oreophila</i> sp.	<i>Shepherdia</i> sp.	
<i>Arisaema</i> sp.	<i>Euphorbia</i> sp.	<i>Oryzopsis</i> sp.	<i>Silene</i> sp.	
<i>Aristolochia</i> sp.	<i>Fagopyrum</i> sp.	<i>Osmorhiza</i> sp.	<i>Silybum</i> sp.	
<i>Asimina</i> sp.	<i>Fagus</i> sp.	<i>Ostrya</i> sp.	<i>Sisyrinchium</i> sp.	
<i>Aster</i> sp.	<i>Festuca</i> sp.	<i>Oxalis</i> sp.	<i>Smilax</i> sp.	
<i>Avena</i> sp.	<i>Forestiera</i> sp.	<i>Oxypolis</i> sp.	<i>Solanum</i> sp.	
<i>Axonopus</i> sp.	<i>Fragaria</i> sp.	<i>Panicum</i> sp.	<i>Sonchus</i> sp.	
<i>Basidiomycetes</i> sp.	<i>Fraxinus</i> sp.	<i>Parthenocissus</i> sp.	<i>Sorghum</i> sp.	
<i>Benzoin</i> sp.	<i>Galactia</i> sp.	<i>Paspalum</i> sp.	<i>Sphenopholis</i> sp.	
<i>Berbis</i> sp.	<i>Galium</i> sp.	<i>Pedicularis</i> sp.	<i>Sporobolus</i> sp.	
<i>Berchemia</i> sp.	<i>Gaura</i> sp.	<i>Persea</i> sp.	<i>Stellaria</i> sp.	
<i>Betula</i> sp.	<i>Gaylussacia</i> sp.	<i>Phalaris</i> sp.	<i>Stillingia</i> sp.	
<i>Bidens</i> sp.	<i>Geranium</i> sp.	<i>Photinia</i> sp.	<i>Stipai</i> sp.	
<i>Blepharoneuron</i> sp.	<i>Glycine</i> sp.	<i>Physalis</i> sp.	<i>Styrax</i> sp.	
<i>Bouteloua</i> sp.	<i>Gyrotheca</i> sp.	<i>Picris</i> sp.	<i>Symphoricarpos</i> sp.	
<i>Brachypodium</i> sp.	<i>Hamamelis</i> sp.	<i>Pinus</i> sp.	<i>Taraxacum</i> sp.	
<i>Brassica</i> sp.	<i>Helianthus</i> sp.	<i>Plagiobothrys</i> sp.	<i>Taxodium</i> sp.	
<i>Briza</i> sp.	<i>Hepatica</i> sp.	<i>Plantago</i> sp.	<i>Tephrosia</i> sp.	
<i>Bromus</i> sp.	<i>Hordeum</i> sp.	<i>Poa</i> sp.	<i>Toxicodendron</i> sp.	
<i>Bryophytes</i> sp.	<i>Houstonia</i> sp.	<i>Polygonatum</i> sp.	<i>Tragopogon</i> sp.	
<i>Bumelia</i> sp.	<i>Hydrocotyle</i> sp.	<i>Polygonum</i> sp.	<i>Tricachne</i> sp.	
<i>Callicarpa</i> sp.	<i>Hypochaeris</i> sp.	<i>Polypodium</i> sp.	<i>Trifolium</i> sp.	
<i>Calochortus</i> sp.	<i>Hypoxis</i> sp.	<i>Polypogon</i> sp.	<i>Triticum</i> sp.	
<i>Carex</i> sp.	<i>Ilex</i> sp.	<i>Polystichum</i> sp.	<i>Tsuga</i> sp.	
<i>Carya</i> sp.	<i>Ipomoea</i> sp.	<i>Pontederia</i> sp.	<i>Ulmus</i> sp.	
<i>Cassia</i> sp.	<i>Iris</i> sp.	<i>Portulaca</i> sp.	<i>Umbellularia</i> sp.	
<i>Castanea</i> sp.	<i>Isoetes</i> sp.	<i>Potentilla</i> sp.	<i>Uniola</i> sp.	
<i>Celtis</i> sp.	<i>Jatropha</i> sp.	<i>Prosopis</i> sp.	<i>Vaccinium</i> sp.	
<i>Centella</i> sp.	<i>Juniperus</i> sp.	<i>Prunus</i> sp.	<i>Vaseyochloa</i> sp.	
<i>Centrosema</i> sp.	<i>Koeleria</i> sp.	<i>Pseudotsuga</i> sp.	<i>Verbascum</i> sp.	
<i>Cerastium</i> sp.	<i>Krigia</i> sp.	<i>Psoralea</i> sp.	<i>Verbena</i> sp.	
<i>Chenopodium</i> sp.	<i>Lactuca</i> sp.	<i>Pteridophyta</i> sp.	<i>Verbesina</i> sp.	
<i>Chloris</i> sp.	<i>Lantana</i> sp.	<i>Pteris</i> sp.	<i>Vernonia</i> sp.	
<i>Chrysobalanus</i> sp.	<i>Lappula</i> sp.	<i>Purshia</i> sp.	<i>Viburnum</i> sp.	
<i>Cirsium</i> sp.	<i>Lathyrus</i> sp.	<i>Pyrrhopappus</i> sp.	<i>Vicia</i> sp.	
<i>Claytonia</i> sp.	<i>Leptochloa</i> sp.	<i>Pyrus</i> sp.	<i>Vigna</i> sp.	
<i>Cleome</i> sp.	<i>Lespedeza</i> sp.	<i>Quercus</i> sp.	<i>Viola</i> sp.	
<i>Commelina</i> sp.	<i>Lolium</i> sp.	<i>Lilium</i> sp.	<i>Vitis</i> sp.	

Additional Literature Regarding Invertebrates

Healy, W. M. 1985. Turkey poult feeding activity, invertebrate abundance, and vegetation structure. J. Wildl. Manage. 49:466-472.

Wild turkey (*Meleagris gallopavo silvestris*) broods use a variety of permanent openings and forest types, but there are few descriptions of the ground cover that is most suitable within a particular plant community. In West Virginia, feeding activity of poults up to 4 weeks old and abundance of invertebrates increased across a gradient of ground cover abundance. Oak (*Quercus spp.*) stands on dry sites produced little herbaceous vegetation and few invertebrates. Mixed hardwood stands on mesic sites produced intermediate levels of herbaceous vegetation and invertebrates. These stand provided adequate brood range, and management could enhance their value for poults. Herbaceous vegetation and invertebrates were most abundant in clearings maintained for wildlife, but poult feeding decreased where vegetation was most abundant because poults could not move through it. Life form, percent cover, and height of ground cover can be used to define early brood range in forested and open sites.

Table 3. Diets (%) of poults aged 1–4 weeks observed while feeding in six sites in West Virginia during 1975. Sites are arranged, left to right, in increasing orders of herbaceous vegetation weight.

Item	Red and scarlet oak (201/100) ^a	Red and white oak (229/80)	Mixed hardwood (148/40)	Yellow- poplar (154/40)	Clearing, grass (119/30)	Clearing, grass/forb (154/40)
Invertebrates						
Araneida	5.0	2.6	1.4	1.3	3.4	1.3
Phalangida	0.0	0.0	2.7	0.0	0.0	1.3
Diptera	27.9	29.3	33.1	33.8	3.4	3.2
Orthoptera	0.0	0.0	0.7	0.6	0.0	1.9
Homoptera	0.0	2.2	0.7	0.0	7.6	20.8
Lepidoptera	4.0	5.7	1.4	3.9	0.0	1.9
Hymenoptera	7.0	1.7	2.0	0.6	0.8	11.0
Coleoptera	1.0	0.9	0.7	0.6	0.0	0.6
Hemiptera	0.0	0.0	0.7	0.6	48.7	15.6
Diplopoda	1.0	0.4	0.0	0.6	0.0	0.0
Lumbricidae	0.0	0.4	0.0	0.0	3.4	0.0
Gastropoda	0.5	0.0	0.0	0.0	0.0	0.0
Unidentified	36.8	26.2	37.2	31.8	31.9	40.3
Total	83.1	69.4	80.4	74.0	99.2	97.4
Plants						
Forb seeds	7.0	4.4	14.2	14.9	0.0	0.6
Violet	6.5	4.4	0.7	14.9	0.0	0.0
Grass seeds	3.0	0.0	0.0	0.0	0.0	0.0
Sedge seeds	2.0	19.7	0.0	0.0	0.0	0.0
Green leaves	3.0	5.2	3.4	7.8	0.8	0.6
Fern	0.0	1.7	0.0	2.6	0.0	0.0
Forb	2.5	2.6	3.4	1.3	0.0	0.0
Tree flower parts	1.0	1.3	1.4	0.0	0.0	0.0
Fungi	0.5	0.0	0.0	1.3	0.0	0.0
Dry leaf parts	0.5	0.0	0.7	0.0	0.0	1.3
Total	16.9	30.6	19.6	26.0	0.8	2.6

^a Number of items eaten per number of minutes of observation of actively feeding poults, i.e., 201 items eaten during 100 minutes.

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